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Soft Error Fundamentals

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Norbert Seifert is a Principle Engineer in the Technology and Manufacturing Group at Intel Corporation in Hillsboro, Oregon, where he currently manages the Soft Error Rate (SER) Team responsible for test chip design, planning and conducting radiation test campaigns, modeling of radiation effects, and interacting with internal and external customers on radiation effects topics.

Dr. Seifert holds a Ph.D. in Physics (Vienna University of Technology) and has over 20 years of experience in the semiconductor industry focusing on the interaction of radiation with matter at various levels throughout his career. He has authored or co-authored over 60 conference and journal publications, written one book on chip-level modeling strategies for soft errors and one book chapter on "Soft Error Resilient System Design through Error Correction". He has given several tutorials, invited talks, and keynotes on radiation effects at conferences and workshops in recent years. He holds five issued patents. In 2014 Dr. Seifert was awarded the Intel Achievement award (Intel's Highest Award) for his radiation effects work. Dr. Seifert actively participated in the creation of several international industry standards on soft errors, such as JEDEC JESD89A, and is currently a member of the JESD89 Task Group working on the JESD89A revision.

Despite significant progress made in recent years, in particular with the introduction of FinFET transistors into the high volume manufacturing market, radiation-induced soft error reliability remains one of the most important fundamental issues in silicon technology. This tutorial will provide an introduction into all key topics to get you prepared for embarking into soft errors and for quickly becoming a productive contributor. Covered topics include: SE mechanism overview, testing for SE, modeling, trends and mitigation.